

A New Workerless Socially Parasitic Species of the Genus *Vollenhovia* (Hymenoptera, Formicidae) from Japan

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Abstract A new workerless socially parasitic species of the ant genus *Vollenhovia* is described and illustrated with a brief note on its biology.

Key words: Formicidae; *Vollenhovia*; workerless social parasite; new species; Japan.

Workerless socially parasitic ants have never been recorded either from Japan or among ca. 60 described species of the genus *Vollenhovia* (OGATA, 1991). Recently we found a new species of *Vollenhovia* from Gifu, Japan. This species is a social parasite on *Vollenhovia emeryi* WHEELER. After observations of several mixed colonies of the parasite-host species for several months, we concluded this species has no worker caste. In this paper, we describe the female and the male with a brief note on their biology.

Vollenhovia nipponica sp. nov.

(Figs. 1 a–e; 2 a–f)

Female. Body length ca. 2.2 mm, head length 0.56–0.61 mm, head width including eyes 0.48–0.50, scape length 0.29–0.32 mm, alitrunk width 0.38–0.41 mm, dorsal petiole length 0.15–0.16 mm, dorsal petiole width 0.16–0.17 mm, dorsal postpetiole length 0.19–0.20 mm, dorsal postpetiole width 0.20–0.22 mm.

Head subrectangular as in Fig. 1 a, longer than wide, with feeble longitudinal rugae; frontal furrow broad from median ocellus to frontal triangle; genal margins shining, without punctures; occipital border slightly concave. Mandible subtriangular with 6 teeth. Eyes rather large, 0.15 mm in maximum diameter. Three ocelli distinct. Antennae 12-segmented; scape not reaching occipital border; the last 3 funicular segments forming distinct club. Anterior border of clypeus roundly convex.

General form of alitrunk, petiole, postpetiole and gaster as in Fig. 1 b. Alitrunk slightly convex in profile; pronotum, mesonotum and propodeum well punctate.

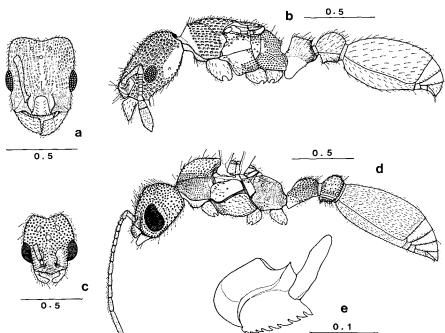


Fig. 1. *Vollenhovia nipponica* n. sp. — a, Head of female; b, profile of female; c, head of male; d, profile of male; e, right aedeagal plate of male.

tured; mesopleuron with brightly shining area lacking punctures. Petiole quadrangular in lateral view, lacking anterior peduncle; dorsal border almost straight in profile; subpetiolar process forming broad lobe as in Fig. 1 b. Postpetiole circular in dorsal view. Gaster smooth and shining.

Body color reddish brown; legs, mandibles and gaster tip slightly lighter.

Male. Body length ca. 2.3 mm, head length 0.46–0.50 mm, head width 0.43–0.46 mm, scape length 0.15–0.16 mm, funicular length 0.95–1.00, alitrunk width 0.43–0.50 mm, postpetiole length 0.19–0.20 mm, postpetiole width 0.20–0.22 mm.

Head as in Fig. 1 c, longer than wide, with deeply concave occipital border, with dense punctures. Mandibles small, spoon shaped, lacking teeth. Compound eyes large, the maximum diameter 0.15–0.20 mm. Three ocelli distinct. Antennae 13-segmented; scape short, not reaching the nearest ocellus; the last funicular segment longer than the previous 2 segments in length. Anterior border of clypeus convex with angulate apex.

General form of alitrunk, petiole, postpetiole and gaster as in Fig. 1 d. Subpetiolar process distinct, angular at the anterior corner (Fig. 1 d). Genitalia (aedeagal plate) as in Fig. 1 e.

Body color blackish brown; antennae, mandibles, legs and gaster tip brownish yellow.

To determine whether this species is really workerless or not, we reared 6 parasite females together with 40 host workers for 7 months (the host workers have no ovariole). As the result, all the offsprings produced were alate (9 females and 6 males). Therefore, we concluded that this species is a workerless social parasite.

Both alate females and males of the parasite species seemed to emerge in August and September because we found several pupae in September nests. They remained in the host nest during the succeeding winter. Dissection showed that most (87.1 %, $n=31$) alate females from the winter nests had an empty spermatheca while all dealated females were inseminated ($n=40$). The alate sexuals did not show any mating behavior inside the artificial nest. These facts suggest that both sexuals may leave the nest in spring for nuptial flight.

Next, we made the following observation to see how new females invade host colonies: 7 females of *V. nipponica* were put at the peripheral part of the artificial nest of *V. emeryi*. Then, the workers of host species carried the parasite females into their nest in the typical adult transport posture of myrmicine ants (see HÖLDOBLER & WILSON, 1990). The females were threatened by some workers with opening mandibles inside the nest just after entrance, but the workers soon began licking the parasites and finally accepted them. The workers behaved to females that invaded by themselves in the same way as to the transported females.

Among dealated parasite females, we often observed mild aggressive behavior: When they encountered one another, they often bit the neck or petiole of another female. However, they did not show any aggressive behavior to the host workers and queens.

References

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